

I claim:

1. A method for adjusting the output light properties of a doped optical fiber

comprising the steps of:

- 5            passing a light ray through the fiber;  
             monitoring the desired property of the light ray exiting the fiber;  
             exposing the multi-mode fiber to means to adjust the refractive properties  
             of the fiber;  
             stopping refractive change means as soon as desired output light  
10           properties are achieved.

2. The method of claim 1 wherein the fiber is a doped fiber and the means to  
adjust refractive index is exposure to laser radiation.

- 15           3. A optical fiber collimating coupler comprising:  
             a single-mode optical fiber;  
             a length of graded-index multi-mode optical fiber attached to said single-mode  
             fiber;  
             wherein the refractive index of the graded-index multi-mode fiber has been  
20           exposed to means to change the refractive properties of the multi-mode fiber.

- 5           4. Optical fiber collimating coupler according to claim 1 in which the means to  
change the refractive properties of the multi-mode fiber comprises an ultra-  
violet laser.
- 10           5. Method of termination of optical fibers comprising the steps of:  
removal of protective jacket, ensuring that the underlying cladding is clean;  
cleaving a single-mode optical fiber;  
cutting a length of graded-index multi-mode optical fiber to a length L which  
approximates  $B(n + 0.5)$  wherein B is the beat length of the light ray expected  
to pass through the multi-mode fiber, and n is any integer;  
15           fusing the multi-mode fiber to the single-mode fiber;  
passing a light ray through the single-mode fiber;  
monitoring the collimation of the light ray exiting the multi-mode fiber;  
exposing the multi-mode fiber to means to adjust the refractive properties of  
the multi-mode fiber;  
20           stopping refractive change means as soon as optimal beam collimation is  
achieved.

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6. Method of coupling an optical fiber to a component of unequal numerical aperture comprising the steps of:
- removal of protective jacket of the fiber, ensuring that the underlying cladding is clean;
- 5 cutting a length of graded-index multi-mode optical fiber to a length  $L$  which approximates  $B(n + 0.5)$  wherein  $B$  is the beat length of the light ray expected to pass through the multi-mode fiber, and  $n$  is any integer;
- fusing the multi-mode fiber to the single-mode fiber;
- passing a light ray through the single-mode fiber;
- 10 placing the component to be coupled and the fiber assembly in the desired configuration;
- monitoring the collimation of the light ray exiting the multi-mode fiber;
- exposing the multi-mode fiber to means to adjust the refractive properties of the multi-mode fiber;
- 15 stopping refractive change means as soon as optimal coupling conditions are achieved .

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